

THE INVENTION CLAIMED IS:

1. A method adapted to protect a fragile component, the method comprising:

5 providing a chamber, having a fragile component contained therein, the chamber being configured to clean a substrate; and

installing a barrier, above the fragile component, that extends over at least the width of the
10 fragile component so as to protect the fragile component from impact by falling objects.

2. The method of claim 1 wherein providing a chamber having a fragile component contained therein,
15 comprises providing a tank having a fragile plate.

3. The method of claim 2 wherein installing a barrier comprises installing a substrate support.

20 4. The method of claim 3 wherein installing a substrate support comprises installing an extended roller.

25 5. The method of claim 4 wherein installing an extended roller comprises installing an extended roller that extends the width of the tank.

30 6. The method of claim 2 wherein installing a barrier comprises installing a plurality of quartz bars that extend the width of the tank.

7. The method of claim 2 wherein installing a barrier comprises installing a net.

8. An apparatus configured to clean a semiconductor substrate, comprising:

a tank configured to contain a liquid the tank having an opening configured to allow a substrate to enter the tank from a position above the tank;

a fragile component contained in the tank, positioned within the footprint of the opening and configured to transmit sonic energy; and

a barrier that extends above at least the width of the fragile component.

9. The apparatus of claim 8 wherein the barrier comprises a substrate support.

10. The apparatus of claim 9 wherein the fragile component comprises a quartz plate.

11. The apparatus of claim 9 wherein the substrate support comprises an extended roller.

12. The apparatus of claim 11 wherein the fragile component comprises a quartz plate.

13. The apparatus of claim 12 wherein the extended roller comprises a hollow extension.

14. The apparatus of claim 13 wherein the extended roller comprises quartz.

15. The apparatus of claim 11 wherein the fragile component comprises a transducer.

16. The apparatus of claim 11 wherein the extended roller that extends above at least the width of

the fragile component comprises an extended roller that extends at least the width of the tank.

17. The apparatus of claim 8 wherein the
5 barrier is configured so as to be transparent to the sonic energy transmitted by the fragile component.

18. The apparatus of claim 8 wherein the
10 barrier comprises a plurality of quartz bars.

19. The apparatus of claim 8 wherein the
barrier comprises a net.

20. The apparatus of claim 8 wherein the
15 barrier has a thickness that is a multiple of one half of the wavelength of the sonic energy transmitted by the fragile component as the sonic energy travels through the barrier material.

20 21. The method of claim 1 wherein the fragile component is configured to transmit sonic energy, and the barrier is positioned between the fragile component and the substrate;

25 wherein the barrier is configured so as to be transparent to the sonic energy transmitted by the fragile component.